NASA SBIR/STTR Technologies

T6.02-9776 - The Small Mixed Field Autonomous Radiation Tracker (SMART) Dosimeter

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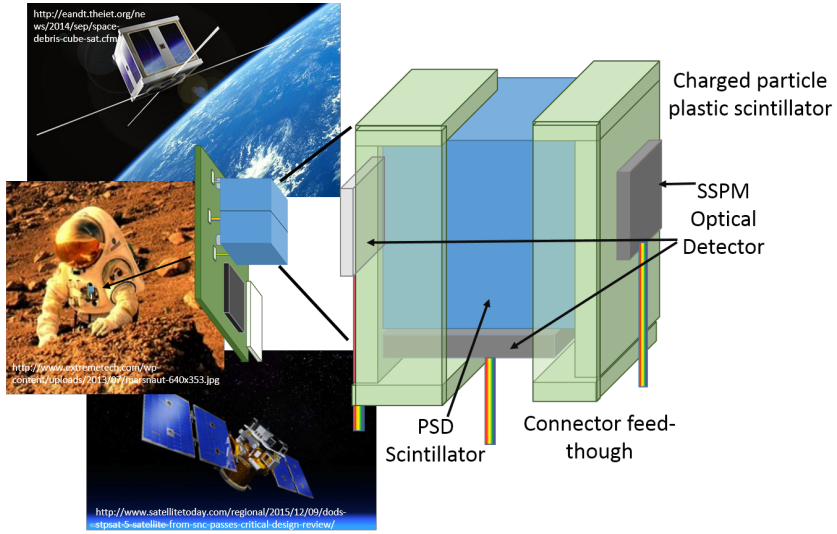
Identification and Significance of Innovation

Active dosimeters for astronauts and space weather monitors are critical tools for mitigating radiation induced health issues or system failure on capital equipment. Commercial spaceflight, deep space flight, or satellites require smarter, smaller and lower power dosimeters. The proposed solution is an instrument that will provide dose distinguished by the type of particle, where tissue or physical damage is dependent on the energy and mass of the radiation.



Estimated TRL at beginning and end of contract: (Begin: 3 End: 4)

Technical Objectives and Work Plan

1. Validate a design that will provide separate dose information per particle species
2. Reduce dosimeter power consumption to allow at least 80 hours on a single charge
3. Ensure astronaut wearable size by utilizing advanced IC design and low power FPGA

NASA Applications

- Real time, accurate dosimeters for intravehicular and extravehicular activities with neutron dosimeter
- Space weather monitoring on either larger or compact satellites

Non-NASA Applications

- Radiation dosimeters are in general demand for commercial applications, such as personnel, waste monitoring, hospitals, nuclear power industry, national laboratories and industrial research
- Border monitoring for security applications
- Protection for satellites and ground-based equipment from solar flares
- Area monitors for space tourism spacecraft

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